

BEST AVAILABLE COPY



UNITED STATES DEPARTMENT OF COMMERCE

Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/514,762 02/28/00 ABBOTT

D TI-26904

MMC1/0316

EXAMINER

Gary C. Honeycutt  
Texas Instruments Incorporated  
PO Box 655474  
MS 3999  
Dallas, TX 75265

PATENT

ART. UNIT

PAPER NUMBER

2841

DATE MAILED:

03/16/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/514,762	ABBOTT ET AL.	
	Examiner	Art Unit	
	Ishwar B Patel	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 January 2001.
- 2a) This action is FINAL.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-9 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 February 2000 is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All
  - b) Some \*
  - c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- 15) Notice of References Cited (PTO-892)
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 18) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 19) Notice of Informal Patent Application (PTO-152)
- 20) Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Applicant's election of group I, claims 1 to 9, in Paper No. 3 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 10 to 19 and 20 (not referred to in paper No. 3), are not elected.

***Drawings***

2. Figure 1a and 1b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (page 8, line 2,8). See MPEP § 608.02(g).

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the plurality of opening parallel to the film edges which correspond to a sprocket transport mechanism as claimed in claim 7 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

4. The drawings are objected to because:

(a) The surface marked 201b and 201a in figure 2a should be marked 201a and 201b respectively.

(b) The surface marked 202b in figure 2c should be 201a. (page 9, line 23).

Correction is required.

(c) "the dielectric film 210 should be" - - the dielectric film 201 - -.

(page 10, line 10).

(d) part number 305, page 12, line 14, is not shown in the figures.

### ***Specification***

5. The disclosure is objected to because of the following informalities:

The first surface 201a is referred to as first surface 201b, and second surface 201b as second surface 201a at many places. (page 9, line 8, line 11, line 14, line 23 and page 10 line 2, line 7, line 9.

The part number should be identified consistently at all the places in the description.

Appropriate correction is required. Also change the number accordingly in the figures.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1- 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Motomura et al. (hereafter referred to as Motomura, 5,737,833).

Regarding claim 1, Motomura discloses a printed wiring board, including:

A base dielectric film of a flexible polymeric material (a polymer sheet 6 see figure 2A, column 6, line 61-67),

A conductor pattern on the first surface of dielectric film having a plurality of contact pads for interconnection from the chip terminals, interconnection between said pads, and from said pads to conductive vias through the film (the electroconductive bumps 5 were exposed as terminal parts, pads, 9 through one of the main surfaces, figure 2C, column 7, line 14 to 25),

a plurality of solder ball contact pads on the second surface of the dielectric film, and a plurality of conductive vias, which interconnect the conductors on the first surface to those on the second surface of said dielectric film (the wiring pattern 7 for connection with terminal parts 9 formed on the other main surface, see figure 2C, column 7, line 15 to 25), except

Motomura does not disclose metal studs etched from the metal matrix. However, in the instant case the *same* structure is made by a different method. Further it has been held that the patentability of a product does not depend on its method of production. If the product in the product – by – process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product

*188101*  
*319101*

was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Regarding claim 2, Motomura discloses all the features of the claimed invention including wherein the metal matrix with stud comprise copper (copper foil 1 with projected electroconductive a group of bumps 5 on the main surface of the electrolytic copper foil 1, see figure 1D, column 6, line 47-60).

Regarding claim 3, Motomura discloses all the features of the claimed invention including wherein the studs (bumps) constitute a tool for punching a pattern of apertures corresponding to conductive vias in the dielectric film (see figure 2A).

Regarding claim 4, Motomura discloses all the features of the claimed invention including the circuit provide the interconnection circuitry for the substrate of an area array integrated circuit package. (see figure3B)

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 5 to 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al. (hereafter referred to as Motomura, 5,737,833).

Regarding claim 5, Motomura discloses all the features of the claimed invention except the circuit further include a plated copper layer disposed over the interconnect patterns and solder ball contact pads. However the copper plating is known in the art and it would have been an obvious matter of design choice to have the copper plating for the desired thickness of the layer. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Motomura with a plated copper layer disposed over the interconnect patterns and solder ball contact pads in order to have the circuit with desired thickness.

Regarding claim 6, Motomura discloses all the features of the claimed invention except the circuit further include a plated layer of Nickel and of Gold over the conductor patterns and solder ball contact pads. However the use of Nickel and Gold over the conductor and solder ball is known in the art to provide抗氧化 properties and better electrical contact. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Motomura with a plated layer of nickel and of gold over the conductor patterns and solder ball contact pads in order to have the circuit with better抗氧化 properties.

Regarding claim 7, Motomura discloses all the features of the claimed invention except a plurality of opening parallel to the film edges which correspond to a sprocket transport mechanism. However the use of opening to the film edges, which correspond, to sprocket transport mechanism is known in the art and used for automation of the handling during manufacturing process. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Motomura with a plurality of opening parallel to the film edges which correspond to sprocket transport mechanism in order to have the automation of the handling during the various manufacturing stages.

8. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al. (hereafter referred to as Motomura, 5,737,833) and further in view of Odaira et al. (hereafter referred to as Odaira, 5,600,103).

Motomura discloses all the features of the claimed invention except the base dielectric film comprises a polyimide polymer in the range of .003 to .006 inches thick. However the selection of thickness of the polymer is an obvious design choice based on the desired end results. Further Odaira et al. disclose using a film with thickness range 50 to 800  $\mu$ m. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the circuit board of Motomura with a thickness in the range of .003 to .006 inch, in order to have a circuit board with desired end results. Further it has been held that where the general condition of a claim are

disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1980).

9. Claim 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura et al. (hereafter referred to as Motomura, 5,737,833) and further in view of Odaira et al. (hereafter referred to as Odaira, 5,600,103).

The modified assembly of Motomura discloses all the features of the claimed invention as shown above.

### ***Conclusion***

10 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yamamoto et al., Sasaoka et al., Tajima et al., Miles et al., Inoue, Hayakawa et al., Ishikawa et al. Zimmerman, Kasubuchi et al., Tokuda et al., Lau, Palmer et al., Felchenfeld et al., disclose printed circuit board similar to applicant's claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar B Patel whose telephone number is (703) 305 2617. The examiner can normally be reached on M-F (6:30 - 4 ) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (703) 308 3301. The fax phone numbers

Art Unit: 2841

for the organization where this application or proceeding is assigned are (703) 305 3431 for regular communications and (703) 305 7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

ibp  
March 9, 2001



R. CUNEO  
PATENT EXAMINER